Airline Price Dispersion before and after the Pandemic 2019-2020

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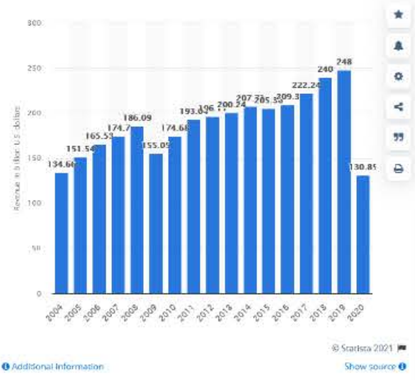
Abstract

This paper explores price dispersion in the United States airline industry before and after the pandemic. Using data from the Airline Origin and Destination Survey and Herfindahl-Hirschman Index the data was aggregated to the carrier-route-quarter level and combined together. While the findings were inconclusive, further research is strongly recommended due to the increasing data.

Introduction

The U.S. airline industry holds some of the biggest airports in the world and thus receives a significant amount of traffic. Almost 20,000 U.S. airports and the industry had 106.3 billion in revenue in 2021. Airline price dispersion is a topic that warrants research interest due to the historical trends of the area. A 36 percent variation in fares should warrant further examination as this is a questionable pattern that cannot easily be explained by cost differences alone. The Covid pandemic provides a unique timeframe to study price dispersion among drastic demand shifts.



Method

Data for the airline routes were from the Airline Origin and Destination Survey. The data includes information such as time (year-quarter), carrier, ticket price, number of passengers, and origin. Focusing on non-stop routes and defining a market as a directional nonstop airport-to-airport route. with the top 8 domestic routes which equate to 16 different markets as SFO to LAX is different from LAX to SFO. The data is then aggregated to the carrier-route-quarter level. The main data set for market share is the Herfindahl-Hirschman Index which was combined with the main airline dataset to have all the variables under one dataset.

$$G = \alpha + \beta \times \ln(HHI) + Covid + \ln(tflt) + \ln(tair) + \ln(lnaseatcap)$$

The Herfindahl index measures market concentration. Covid distinguishes the time frame of the data with covid. Tflt is the total number of flights on a given route. Then there is log of seat capacity.

Table 1 – Main Results

VARIABLES	(1) logodds	(2) logodds	(3) logodds	(4) Logodds
covid	0.045***	0.053***	0.046***	0.053***
	(0.015)	(0.014)	(0.015)	(0.014)
lnmktshare	0.001		-0.000	
	(0.002)		(0.006)	
lnhhi	-0.131		-0.130	
	(0.107)		(0.107)	
lntflt	0.000		0.000	
	(0.019)		(0.018)	
lntair		0.017		0.017
		(0.021)		(0.022)
lnaseatcap			0.002	0.001
			(0.009)	(0.005)
Constant	-0.672***	-0.625***	-0.692***	-0.631***
	(0.106)	(0.079)	(0.154)	(0.093)
Observations	305,589	305,589	305,589	305,589
R-squared	0.9400	0.9381	0.9400	0.9381

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Results

This table helps show that covid had a small but positive correlation. For a 1 unit increase, there was a .045-.053 correlation. Overall, most of the regression models failed to yield many statistically significant results.

Conclusion

The U.S. airline industry while suffering a major drop from Covid has been bouncing back. Price dispersion is still an area worthy of plenty of research. A caveat of this study is due to the lag time for the airline data. The fourth quarter of 2020 was not able to be included in the analysis as it was not released yet. As more time goes on, longer trends will be more easily salient and if the pandemic goes away that time after the pandemic will also be a useful period to study and compare to the previous. Directions for future research should examine a wider range of data especially as the pandemic has continued. Further research could help show trends in the overall data.